

Glasses; or by comparing two Bubbles of Water blown at distant times, in the first of which the whiteness appeared, which succeeded all the Colours, and in the other, the whiteness which preceded them all.

O B S. XXIV.

When the two Object-Glasses were lay'd upon one another, so as to make the Rings of the Colours appear, though with my naked Eye I could not discern above 8 or 9 of those Rings, yet by viewing them through a Prism I have seen a far greater multitude, insomuch that I could number more than forty, besides many others, that were so very small and close together, that I could not keep my Eye steady on them severally so as to number them, but by their extent I have sometimes estimated them to be more than a hundred. And I believe the Experiment may be improved to the discovery of far greater numbers. For they seem to be really unlimited, though visible only so far as they can be separated by the refraction, as I shall hereafter explain.

But it was but one side of these Rings, namely, that towards which the refraction was made, which by that refraction was rendered distinct, and the other side became more confused than when viewed by the naked Eye, insomuch that there I could not discern above one or two, and sometimes none of those Rings, of which I could discern eight or nine with my naked Eye. And their Segments or Arcs, which on the other side appeared so numerous, for the most part exceeded

exceeded not the third part of a Circle. If the Refraction was very great, or the Prism very distant from the Object-Glasses, the middle part of those Arcs became also confused, so as to disappear and constitute an even whiteness, whilst on either side their ends, as also the whole Arcs furthest from the center, became distincter than before, appearing in the form as you see them designed in the fifth Figure. Fig. 5.

The Arcs, where they seemed distinctest, were only white and black successively, without any other Colours intermixed. But in other places there appeared Colours, whose order was inverted by the refraction in such manner, that if I first held the Prism very near the Object-Glasses, and then gradually removed it further off towards my Eye, the Colours of the 2d, 3d, 4th, and following Rings shrunk towards the white that emerged between them, until they wholly vanished into it at the middle of the Arcs, and afterwards emerged again in a contrary order. But at the ends of the Arcs they retained their order unchanged.

I have sometimes so lay'd one Object-Glass upon the other, that to the naked Eye they have all over seemed uniformly white, without the least appearance of any of the coloured Rings; and yet by viewing them through a Prism, great multitudes of those Rings have discovered themselves. And in like manner plates of Muscovy-glass, and Bubbles of Glass blown at a Lamp-furnace, which were not so thin as to exhibit any Colours to the naked Eye, have through the Prism exhibited a great variety of them ranged irregularly up and down in the form of waves. And so Bubbles